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VGA connector pin-9 - If your equipment/application requires that the pin-9 signal of the selected input be passed to output connector pin-9, it will be necessary to add (solder) jumpers (JMP1 = Input 1, JMP2 = Input 2, etc.) onto the inside of the rear panel (see Figure 5-A). Each jumper consists of 2 etch/solder pads separated by approximately 1/16th inch gap. Connect (solder a wire across) the 2 pads for the desired input/ jumper (example: for Input 1, connect the JMP1 solder pads). Pin-9 pass through may be enabled for as many inputs as desired. To access the inside of the rear panel, **DISCONNECT POWER** and remove four screws from the top of the switcher. The bottom panel can then be removed. Unplug the three cables connected to the video circuit card enabling it to be removed.

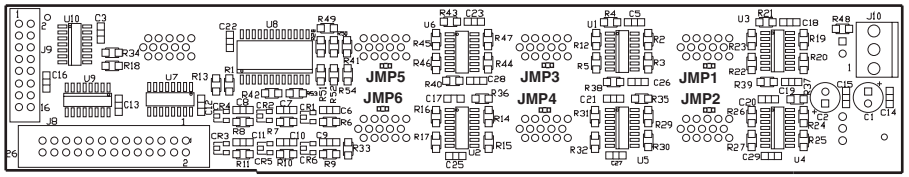

FIGURE 5-A

Specifications

Video

Input Video Signal Level	*0.5 to 2 volts p-p*
Video Gain	*Unity*
Frequency Range (H. Sync)	*15-145 kHz*
Frequency Range (V. Sync)	*30-170 Hz*
RGB Video Bandwidth	*350 MHz (-3 dB)*
Input Impedance	*75 Ohms*
Output Impedance	*75 Ohms*
Termination Impedance	*75 Ohms*
Sync Input Impedance	*510 Ohms*
Connectors - Input and Output VGA	*15 pin HD D-Sub (Female)*

Audio

Input	*Type*	*6 Inputs, Stereo, Balanced or Unbalanced*
	Connectors	*3.5mm Captive screw terminal, 5 conductor*
	Maximum Level	*19.5 dBu*
	Impedance Balanced/Unbalanced	*25 kohms/50 kohms (DC coupled)*
	Gain Adjustment	*–15.0 dB to +9.0 dB, adjustable per input*
Throughput	*Response*	*±.05 dB 20 Hz to 20 kHz*
	Maximum Channel Gain	*15.0 dB (Input gain @ max., Balanced, Output)*
Output	*Type*	*1 Output, Stereo, Balanced or Unbalanced*
	Connector	*3.5mm Captive screw terminal, 5 conductor*
	Impedance	*50 Ohms unbalanced, 100 ohms balanced*
	Gain	*Unbalanced: 0 dB, Balanced: +6 dB*

General

Operation Temperature	*0° to +50° C*
Storage Temperature	*–40° to +70° C*
Humidity	*10% to 90% non-condensing*
MTBF Demonstrated	*30,000 Hours*
Vibration	*NSTA 1A in carton*
Approvals	*CE, UL Listed, FCC Class A*
Power Supply	*100-240 VAC 50/60 Hz, 0.3A max.*
	Internal auto-switchable
Dimensions	*1.75" H x 17.4" W x 9.5" D*
	4.45cm H x 44.1cm W x 24.13cm D
Shipping Weight	*8 lbs. (3.6 kg)*
Warranty	*3 years parts and labor*

Part Numbers

SW6 VGA Audio Switcher	*60-260-01*
IR-20 Infrared Remote Control	*70-036-02*
3.5mm Captive screw connector	*10-319-01*
19" 1U Universal Rack Shelf	*60-190-01*
VGA/MAC Adapter (Composite Sync)	*26-340-01*
VGA/MAC HV Adapter (Mac H/V sync)	*26-340-02*

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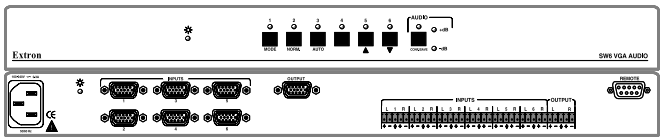
INTERFACING, SWITCHING AND DISTRIBUTION

User's Guide



SW6 VGA Audio

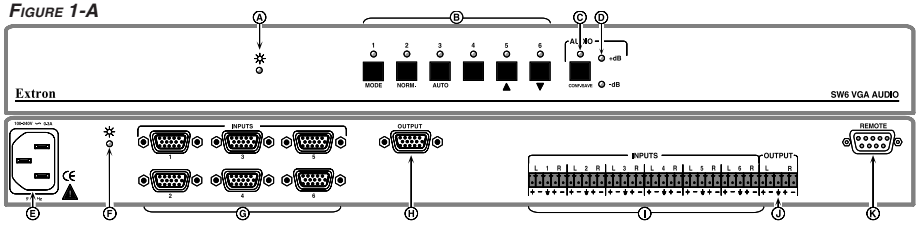
6-Input, 1-Output VGA — QXGA and Stereo Audio Switcher

68-377-01 **Rev. D**
06 06

Inverted per CAMBOARD Electronics

The **SW6 VGA Audio** is a 6 input - 1 output audio/video switcher housed in a rack mountable, 1U high, full width metal enclosure with internal, universal 100-240 VAC 50/60 Hz power supply. The switcher front and rear panels are shown in Figure 1-A followed by descriptions of controls and connectors.

FIGURE 1-A



A **Power** LED - ON if AC power applied. (also see item F)
B Six Input Select Buttons and LEDs - Used to select an input in Manual mode.
Hold button 1 and press and hold NORM (Normal = Manual) or AUTO (Autoswitch) button to select Mode.
Buttons 5/6 are used to increase/decrease audio setting w/Audio LED ON.
C AUDIO Button/LED - Used to set/indicate audio view/adjust operation.
D ±dB LEDs - Indicates polarity of Audio Level setting.
E IEC AC Power connector - 100-240 VAC 50/60 Hz, 0.3 amps maximum.
F **Power** LED - ON if AC power applied. (also see item A)
G Six VGA input connectors - Up to six VGA inputs may be connected.
H VGA output connector - Selected VGA input available at this connector.
I Six audio input captive screw connectors.
J Audio output captive screw connector.
K **REMOTE** connector - Used for RS-232 and/or Contact Closure control.

Operating Modes - The SW6 VGA Audio switcher operates in Manual or Autoswitch Mode (see item B above). Input selection in Manual mode may be done using Input select buttons 1 - 6 on the front panel or through the rear panel Remote connector (contact closure or RS-232). In Autoswitch Mode the switcher automatically selects the highest number input that has sync pulses available while blocking input selection by the front panel switches or through the Remote connector.

Connection Diagram - The connection diagram in Figure 1-B shows four PC computers and two MAC computers (with cable adapters) connected as inputs to the SW6 VGA Audio switcher. A projector is shown connected to the switcher output.

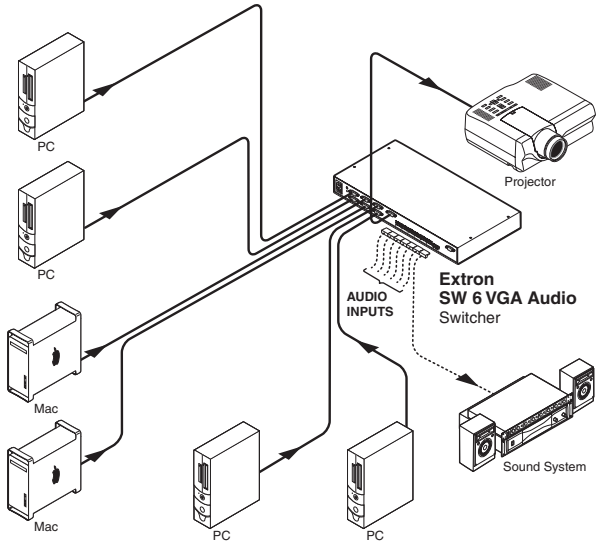


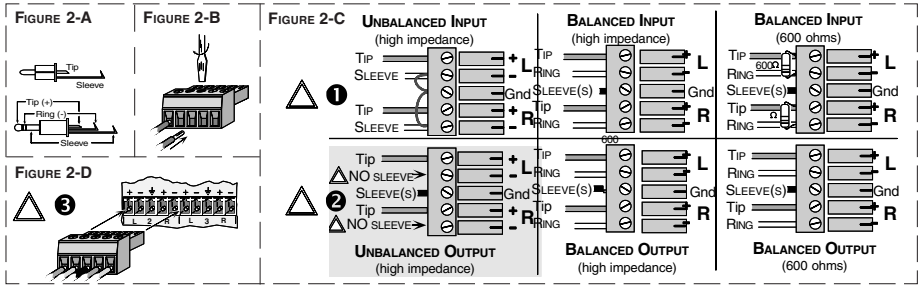
FIGURE 1-B

Using the Captive Screw Audio Connectors

The SW6 VGA Audio switcher has a single row of 3.5 mm audio receptacles along the bottom right side of the rear panel (see items I & J, Figure 1-A) with six inputs labeled L 1 R through L 6 R, and one output. Each audio receptacle has five contacts, and is labeled for left (L), right (R), polarity (+/–), ground, and the input numbers plus the output.

Captive screw audio connectors (3.5 mm) are supplied (P/N 10-319-10) with the switcher, one for each input and one for the output. Connectors must be wired to the audio cables using the captive screws inside the connectors (FIGURE 2-B). Each audio connector will then be plugged into the appropriate input or output position on the rear panel. Figure 2-C shows three methods of wiring the connectors, depending on your system, with input examples across the top and output examples below.

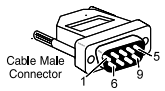
When making connections for the SW6 VGA Audio switcher from existing audio cables, see Figure 2-A. The round audio connectors are shown with the top one (tip and sleeve only) for unbalanced audio and the bottom one (tip, ring and sleeve) for balanced audio. The "ring", "tip" and "sleeve" markings are also used on the captive screw audio connector diagrams in Figure 2-C. Together, these examples may be used as a guide for terminating audio cables.



❶ — Do not connect equipment that uses phantom power.
❷ — If using Unbalanced Output example above (shaded background), connect the sleeve(s) to Ground (Gnd). Connecting it to a negative (-) terminal will damage audio output circuits. NO Sleeve means NO CONNECTION!
❸ — There is no physical way to prevent you from plugging an audio connector partially in one input and partially in the adjacent input. Align the Audio connectors carefully before plugging them in to avoid circuit damage.

Remote Control

The REMOTE connector enables the switcher to be controlled from an RS-232 Host device/system or a contact closure device such as Extron's IR-20 Infrared Remote Control. RS-232 and Contact Closure REMOTE connector pin assignments are shown to the right. To select an input through the Remote connector contact closure pins, momentarily[1] connect the pin for the desired input number (#) to logic ground (pin 5).



RS-232 PIN ASSIGNMENTS

2	TRANSMIT DATA (TX)
3	RECEIVE DATA (RX)
5	GROUND (GND)

PROTOCOL FIXED AT:
9600 BAUD, 8 DATA BITS
1 STOP BIT, NO PARITY

CONTACT CLOSURE PIN ASSIGNMENTS

1	INPUT #1	6	INPUT #3
4	INPUT #2	7	INPUT #4
5	GROUND	8	INPUT #5
		9	INPUT #6

NOTE: PIN 5 IS THE ONLY PIN SHARED BETWEEN RS-232 AND CONTACT CLOSURE.

Extron's Windows Compatible Software

UNIVSW is Extron's Windows® 3.1 and Windows 95 compatible program which may be used to control switcher input selection, audio adjustments and mode selection (Manual or Autoswitch). It is supplied on a CD-ROM from which it must be installed onto and launched from the hard drive.

To install the software onto the hard drive (it will occupy approximately 1 MB of hard disk space), run LAUNCH.EXE from the CD. To run UNIVSW from the hard disk, double-click on the UNIVSW program icon in the Extron Electronics group or folder. For information about program features, double-click on the UNIVSW Help icon in the Extron Electronics group (or folder) or press the F1 key after UNIVSW is loaded.

Command/Response Table

The Command/Response table on Page 3 lists those commands which the SW6 VGA Audio switcher recognizes as valid and the responses that will be returned to the Host. Error responses/causes and switcher initiated messages are listed at the bottom of the table.

[1]Duration of a momentary connection is defined as 100 milliseconds for the SW6 VGA Audio switcher.

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RS-232 Command/Response Table

Abbreviations & Definitions:

↵ = CR/LF, · = space, A = Audio, Auto = Autoswitch, C = Channel-Audio & Video, F = Mode, V = Video, M = Maximum Inputs, QVER = Software Version

X1 = Ø – 6 (Input Ø = muted output)
X2 = Software version x.xx
X3 = Numerical value –15 to +9
X4 = Ø to 15 (16 steps + or –)
X5 = Mode - 1 = Front Panel, 2 = Auto
X6 = 6 (Total # of inputs)

ASCII to HEX Conversion Table

	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	Del	7F

Command Description	COMMAND ASCII	RESPONSE to Host
Select input channel X1 Audio only	X1$	↵AX1↵
Example: Select Input channel #2 audio	2$	↵A2↵
Select input channel X1 Video only	X1&	↵VX1↵
Example: Select Input channel #5 video	5&	↵V5↵
Select input channel X1 Audio and Video	X1!	↵CX1↵
Example: Select Input channel #6 A & V	6!	↵C6↵
Set channel X1 positive audio gain to X4	X1*X4G	↵INX1·AUD=X3↵
Example: Set Input 2 Audio Gain = +7	2*7G	↵IN2·AUD=+7↵
Set channel X1 attenuation to X4	X1*X4g	↵INX1·AUD=X3↵
Example: Set Input 3 Audio Gain = –13	3*13g	↵IN3·AUD=–13↵
Set Front Panel Mode	#1	↵F1↵
Set Auto-Switch Mode #2	↵F2↵	
Information request	i	(Same as I below)
Information request	I	↵VX1·AX1·FX5·QVERX2·MX6↵
Example:	I	↵V3·A3·F1·QVER1.23·M6↵
Request for part number	n	(Same as N below)
Request for part number	N	↵N60-260-01↵
Query Software Version	q	(Same as Q below)
Query Software Version	Q	↵QVERX2↵
Example:	Q	↵QVER1.23↵
Explanation: Software version is 1.23 (example only)		
View input channel X1 Audio Gain	vX1G	(Same as V below)
View input channel X1 Audio Gain	VX1G	↵INX1·AUD=X3↵
Example:	V3G	↵IN3·AUD=–13↵
Explanation: Input 3 Audio Gain = –13		
Error Response Codes		
Invalid input channel (out of range)		↵E01↵
Invalid input channel change (Autoswitch mode active)		↵E06↵
Invalid mode parameter		↵E09↵
Invalid command received by SW6 VGA Audio		↵E10↵
Invalid value (out of range)		↵E13↵

SW6 VGA Audio Switcher-Initiated Messages

When a local event takes place, such as a front panel operation, the SW6 VGA Audio switcher responds by sending a message to the Host. The switcher initiated messages are listed below (underlined).

↵(C) COPYRIGHT 1998, EXTRON ELECTRONICS SW6 VGA AUDIO, Vx.xx↵

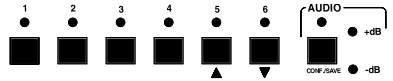
↵C1↵ — The copyright message is initiated by the switcher when it is first powered ON. Vx.xx is the software version number. This is followed by ↵C1↵ identifying the current selected input = 1 (power-up default is input #1).

↵Cx↵ — This message is sent to the Host if the input is changed using the front panel. (x = new input #)

↵RECONFIG↵ — This message is sent to the Host when there is a change in the audio level setting.

The switcher does not expect a response from the Host to any of the above switcher-initiated messages.

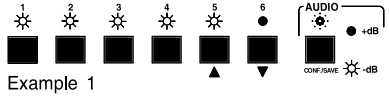
Audio Level Control



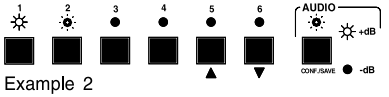
The Audio Level Setting (Gain) for each input can be viewed, changed and saved in memory using the switcher front panel buttons or with RS-232 commands. The setting range is –15 dB to +9 dB. To view or change the Audio level using the front panel buttons, the Switcher AUDIO LED must be blinking. This is controlled by the AUDIO button. To view or change the audio setting, first select the desired input, then press and hold the AUDIO button until the AUDIO LED (above the AUDIO button) begins blinking. The current memory Audio Level Setting for the selected input will be displayed in the input select LEDs (1-5). Each LED can display four possible values as shown below.

● = OFF - Value = 0, ☼ = Slow blink - Value = 1, ☼ = Fast blink - Value = 2, ☼ = ON - Value = 3

The sum of the values represented by the five LEDs is the Audio Level setting for the selected input. The +dB and/or the –dB LED will be ON to indicate the polarity of the Audio Level setting. Both LEDs ON indicates a setting of zero (0). Examples using the LED symbols shown above follow:



Example 1



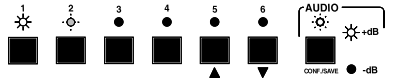
Example 2

In Example 1 above, the AUDIO LED is blinking indicating that LEDs 1-5 represent the audio level setting for the selected input. Input 1-5 LEDs are ON, each has a value of 3. The –dB LED is ON indicating a negative setting. The Audio level setting for the selected input is –15 dB (5 x 3 = 15).

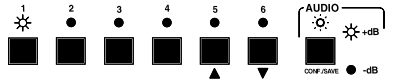
In Example 2 above, the AUDIO LED is blinking indicating that LEDs 1-5 represent the audio setting for the selected input. Input 1 LED is solid ON, value = 3. Input 2 LED is blinking fast, value = 2. Total Value is 3 + 2 = 5. The +dB LED is ON indicating a positive setting. The Audio level setting is +5 dB for the selected input.

Input buttons 5 and 6 may be used to increase or decrease the current audio level setting. To change the setting for the last example from +5 dB to –1 dB, with the AUDIO LED still blinking, press and release the Input 6 (decrease) button six times. Each time the button is pressed and released, the LEDs change as follows:

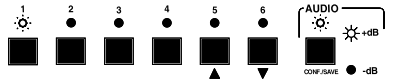
#1 Display changes to +4.



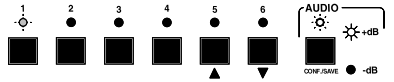
#2 Display changes to +3.



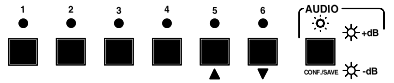
#3 Display changes to +2.



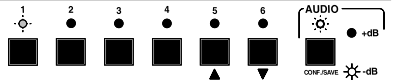
#4 Display changes to +1.



#5 Display changes to 0. ± dB LEDs both go ON.



#6 Display changes to -1 +dB LED goes OFF



The displayed setting in the example above has changed to –1 dB. However, the stored setting in memory will remain at +5 dB until the new setting is saved. Press and hold the AUDIO button to save the current displayed setting in memory. Release the AUDIO button when the AUDIO LED goes OFF. The audio level setting can also be loaded using RS-232 commands. See "RS-232 Command/Response Table" on page 3 for details.

Audio Level Reset

To reset the audio level to 0 dB for all inputs, press and hold the AUDIO button. The AUDIO LED will begin to blink. Continue to hold the AUDIO button in (approximately 10 seconds) until the AUDIO LED goes OFF. All input audio levels will be set to 0 dB.

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